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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/042,244	01/11/2002	Cyprian Uzoh	2022/48640DV	5254

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CROWELL & MORING, L.L.P.
Intellectual Property Group
P.O. Box 14300
Washington, DC 20044-4300

EXAMINER

LEADER, WILLIAM T

ART UNIT

PAPER NUMBER

1742

DATE MAILED: 07/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/042,244	UZOH ET AL.	
	Examiner	Art Unit	
	William T. Leader	1742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 January 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 12-47 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 12-47 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>from 09/544,558</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claims 13, 22 and 41 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. These claims recite the limitation that the oxidizer is selected from a Markush group which includes inorganic oxidizers and organic oxidizers. These two members of the Markush group appear to include all possible oxidizers, that is, the oxidizer would be either inorganic or organic. Since all possible oxidizers appear to be included within the scope of claims 13, 22 and 41, these claims are not seen as further limiting a previous claim.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 18, 19 and 26 recite the limitation "said conductive metal" in line 2.

There is insufficient antecedent basis for this limitation in the claim. Independent claims 12 and 21 recite "a conductive material" rather than "a conductive metal".

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 12-14, 16-23, 25, 26, 30, 32-42 and 47 are rejected under 35

U.S.C. 102(b) as being anticipated by Morrissey (5,277,790).

3. The Morrissey patent is directed to an aqueous electroplating solution for depositing gold or gold alloys. The solution contains water, a gold salt that will provide ions of gold, and an aromatic nitro compound such as nitrobenzene. See example 1. Nitrobenzene is an oxidizer. All constituents recited in claims 12, 13, 19, 21 and 22 are disclosed by Morrissey. By teaching the addition of an aromatic nitro compound, Morrissey discloses a method of modifying a plating solution as recited in claim 36. The limitation of claim 41 is the same as that recited in claims 13 and 22.

4. Claim 14 recites that the oxidizer is an organic nitrite. A nitrite is a compound containing the radical -NO_2 (The Condensed Chemical Dictionary). Inasmuch as nitrobenzene contains the -NO_2 radial, it meets the limitations of claims 14, 23 and 42.

5. Morrissey teaches the inclusion of 1 milliliter of nitrobenzene in one liter of plating solution. See example 1. This concentration falls within the range recited in claims 16, 17, 25 and 47. The addition of this amount of nitrobenzene would not be expected to appreciably change the pH of the solution.

6. Morrissey discloses that one of the alloying metals may be copper while other alloying metals include silver and cobalt (column 4, line 15) meeting the limitations of claims 18 and 26. The solution may contain other additional additives to control the crystalline structure (i.e., grain refiners) meeting the limitation of claim 20. The pH may be 6.5 or less and may be 4.0 (column 3, lines 1-2). This range meets the limitation of claim 30.

7. Claims 32-35 and 37-39 recite an intended use of the claimed composition. A recitation of intended use is not given patentable weight in evaluating the patentability of claims directed to a composition. Nevertheless, since the composition disclosed by Morrissey is the same, it would be capable of the same uses recited by applicant.

8. Claims 12, 13, 15-18, 20-22, 24-26, 30, 32-41 and 47 are rejected under 35 U.S.C. 102(b) as being anticipated by Berdan et al (4,169,018).

9. The Berdan et al patent is directed to the electrodeposition of copper. Table 1 lists the composition of the copper plating solution. The solution includes a copper salt which will provide copper ions, and a nitrate which may be supplied by nitric acid. Nitric acid is an oxidizing acid. Thus all components recited in claims 12, 13, 18, 21, 22 and 26 are met. By teaching the addition of a nitrate, Berdan et al disclose a method of modifying a plating solution as recited in claim 36. As noted above, the limitation of claim 41 is the same as that recited in claims 13 and 22.

10. The pH of the plating solution is preferably less than 2 (column 3, lines 29-30). This meets the limitation of claims 15, 24 and 30. The nitrate is present in an amount of 15-30 grams per liter, which approximately equals 1.5 to 3.0 wt %, and falls within the ranges recited in claims 16, 17, 25 and 47. The bath contains fluoride as a nucleating agent which would serve as a grain refiner as recited in claim 20. As noted above, claims 32-35 and 37-39 recite an intended use of the claimed composition which is not given patentable weight. Addition of the small amount of nitric acid listed in table 1 would not appreciably affect the highly acidic pH of the plating solution as recited in claim 40.

11. Claim 12, 13, 18, 20-22, 26, 30, 32-35 and 37-41 are rejected under 35 U.S.C. 102(e) as being anticipated by Landau et al (6,113,771).

12. The Landau et al patent is directed to electroplating solutions for depositing a metal such as copper. The solution includes water, a copper salt which would provide copper ions, and a supporting electrolyte which may be nitric acid or perchloric acid. See claim 18. Nitric acid and perchloric acid are oxidizing acids. All constituents recited in claims 12, 13, 18, 21, 22 and 26 are disclosed by Landau et al. By teaching the addition of a supporting electrolyte, Landau et al disclose a method of modifying a plating solution as recited in claim 36. The limitation of claim 41 is the same as that recited in claims 13 and 22.

13. Landau et al disclose that the plating solution may contain various additives such as levelers, brighteners, grain refiners, stress reducers and wetting agents (column 5, lines 8-14), thereby teaching the limitation of claim 20. Landau et al disclose that the plating solution may contain a small amount of an acidic supporting electrolyte. See claim 18. This inclusion meets the limitation of claim 30. As noted above, claims 32-35 and 37-39 recite an intended use of the claimed composition which is not given patentable weight. The addition of the small amount of oxidizing acid recited in claim 18 would not appreciably affect the pH of the plating solution as recited in claim 40.

14. Claims 12-14, 19, 21-23, 27, 30 and 32-43 are rejected under 35 U.S.C. 102(b) as being anticipated by Drent (5,369,074).

15. The Drent composition is directed to a catalyst composition. The composition includes a palladium compound such as palladium acetate which would provide palladium ions (column 3, lines 40-50). The composition may include an organic oxidizing agent such as butyl nitrite (column 4, lines 34-39). The composition includes an acid which would serve as a solvent (column 3, lines 52-65). Thus, all constituents recited in claims 12-14, 19, 21-23, 27, 36, 42 and 43 are disclosed by Drent. Due to the presence of the acid component, the solution of Drent would be acidic as recited in claim 30. By teaching the addition of an organic oxidizing agent, Drent discloses a method of modifying a solution as recited in claim 36. As noted above, claims 32-35 and 37-39 recite an intended use of the claimed composition which is not given patentable weight. The addition of the organic oxidizing agent would not appreciably affect the pH of the solution as recited in claim 40 due to the presence of the separate acidic constituent.

16. A "plating solution" is considered to be any solution which is capable of plating. The solution of Drent contains all of the constituents recited by applicant. One of ordinary skill in the art would recognize that the solution of Drent would be capable of functioning as a plating solution in the same manner as applicant's solution.

17. Claims 12, 13, 18, 21, 22, 26, 28, 29, 32-39, 41, 44 and 45 are rejected under 35 U.S.C. 102(e) as being anticipated by DeNinno et al (6,147,089)

18. The DeNinno et al patent discloses a solution useful in producing organic nitrogen compounds. An amine having the formula designated as formula LXII is treated with t-butyl nitrite and anhydrous cupric halide in a polar solvent (column 36, lines 40-46). The cupric halide would provide ions of a conductive material. This solution contains all of the constituents recited by applicant in claims 12, 13, 18, 21, 22, 26, 28, 29, 36, 41, 44 and 45. By teaching the addition of t-butyl nitrate, Drent discloses a method of modifying a solution as recited in claim 36. As noted above, claims 32-35 and 37-39 recite an intended use of the claimed composition which is not given patentable weight.

19. As noted above, a "plating solution" is considered to be any solution which is capable of plating. The solution of DeNinno et al contains all of the constituents recited by applicant. One of ordinary skill in the art would recognize that the solution of DeNinno et al would be capable of functioning as a plating solution in the same manner as applicant's solution.

Claim Rejections - 35 USC § 103

20. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

21. Claims 15 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morrissey (5,277,790). As noted above, Morrissey teaches that the pH of the plating solution may be 4.0. Claims 15 and 24 recites a pH range of less than 4. When the claimed range and the prior art range are very similar (i.e., less than 2 and 2) the range of the prior art establishes *prima facie* obviousness because one of ordinary skill in the art would have expected the similar values to have the same

properties. *See in re Peterson*, 65 USPQ2d 1379, 1382, citing *titanium Metals Corp. V. Banner*, 227 USPQ 773, 779.

22. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Berdan et al (4,169,018).

23. As noted above, Berdan et al teach that the pH of the plating solution is preferably less than 2.0. This range overlaps the range recited in claim 31. Choice of a value from within the range disclosed by Berdan et al would have been *prima facie* obvious.


24. Claims 16, 17, 25, 46 and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Landau et al (6,113,771).

25. Landau et al discloses that the supporting electrolyte is added in an amount of less than 0.05 molar (claim 18). For nitric acid (which has a molecular weight of 63.02) this range is roughly equivalent to a range of less than 0.3 wt% or 3000ppm. The range disclosed by Landau et al overlaps the range recited in claims 17, 25 and 47 in the 0.01 to 0.3 wt% region. The Landau et al range overlaps the range recited in claim 16 in the 500 to 3000 ppm region, and overlaps the range recited in claim 46 in the less than 500 ppm region. Choice of a value from within the range disclosed by Landau et al would have been *prima facie* obvious.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William T. Leader whose telephone number is 571-272-1245. The examiner can normally be reached on Mondays-Thursdays and alternate Fridays, 7:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


William Leader
July 22, 2004


ROY KING
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700